

CLAIMS

I claim:

Sub 51

1. A method of cleaning cut material from a machine tool, in which a cleaning fluid is flowed across at least one surface of the machine tool

5 intermittently.

2. The method according to claim 1, wherein said cleaning fluid flows to a channel leading to a sump, and wherein said cleaning fluid is flowed through the channel to the sump intermittently.

3. A method according to claim 1, wherein a continuous flow of cleaning fluid is utilised, the cleaning fluid flowing into a receptacle from which fluid flows periodically in a cleaning operation.

4. A method according to claim 3, wherein means is provided to restrain significant flow of fluid from the receptacle until a substantial volume has accumulated within the receptacle.

5. A method according to claim 4, wherein the substantial volume is at least 2 litres.

6. A method according to claim 5, wherein the substantial volume is at least 5 litres.

7. A method according to claim 1, wherein the intermittent flow is achieved by the use of a valve mechanism.

8. A method according to claim 1, wherein the intermittent flow is achieved by the use of a syphon.

9. A method according to claim 1, wherein the intermittent flow is achieved by the use of a double syphon.

10. A method according to claim 9, wherein the quantity which is flowed intermittently is between 3 and 20 litres

11. A method according to claim 10, wherein the quantity which is flowed intermittently is between 5 and 10 litres.

12. A method according to claim 1, wherein the time interval between successive outflows is between 30 seconds and 2 minutes.

✓13. A machine tool, comprising means to flow fluid across one or more surfaces of the machine to remove swarf, said means comprising:

- a) a fluid receptacle;
- b) means to deliver fluid to the receptacle;
- 5 c) a flow line extending from the receptacle to one or more machine surfaces through which fluid may flow from the receptacle in the removal of swarf from the surface; and
- d) outflow means to cause fluid to flow from the receptacle only intermittently.

✓14. A machine tool according to claim 13, wherein the delivery means comprises a pump operative to pump fluid to the receptacle at a flow rate of between 2 and 10 litres per minute.

15 ✓15. A machine tool according to claim 14, wherein the pump is operative to pump fluid at a flow rate of between 5 and 7 litres per minute.

16. A machine tool according to one of claim 12, wherein the outflow means is operative to cause fluid to be delivered therefrom intermittently at a
20 higher rate than the delivery of fluid thereto.

17. A machine tool according to claim 12, wherein said outflow means is operative to discharge the receptacle in a period of time between 2 and 7 seconds.

18. A machine tool according to claim 17, wherein said outflow means is operative to discharge the receptacle in a period of time between 3 and 5 seconds.

19. A machine tool according to claim 12, wherein the volume of fluid discharged is substantially the whole of the contents of the receptacle.

20. A machine tool according to claim 12, further comprising a plurality of such fluid receptacles, said delivery means, said flow line and said outflow means to cause liquid to flow from the receptacle being operative to cause fluid to flow across a plurality of surfaces of the machine.

21. A machine tool according to claim 20, further comprising a channel leading to a sump into which cutting fluid and swarf are flowed, in which at least one of said plurality of fluid receptacles, delivery means, flow line and outflow means to cause liquid to flow from the receptacle is operative to cause fluid to flow through the channel intermittently.

22. A machine tool according to claim 21, wherein the fluid and swarf are separated in the sump.

23. A machine tool according to claim 20, further comprising a pump means located in the sump and which is operative to deliver fluid to the or each receptacle at a substantially constant flow rate.

24. A machine tool according to claims 21, wherein the pump means is operative to deliver fluid to the cutting head of the machine.

✓ 25. A swarf management system, comprising:

- a) fluid receptacle;
- b) pump means to deliver fluid from a sump to the receptacle;
- c) a flow line extending from the receptacle from which fluid flow from the receptacle may be directed across a machine surface for the removal of swarf therefrom; and
- d) outflow means to cause fluid to flow from the receptacle only intermittently.

26. A swarf management system according to claim 25, wherein the

outflow means is adapted to generate an intermittent flow of between 36 and 600 litres per minute.

27. A swarf management system according to claim 24, wherein the
5 outflow means is operative to produce an outflow every 30 - 120 seconds.

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